

1 WHAT IS CLAIMED IS:

- 2 1. A cloned gene encoding the expression of an antigenic mutant  
3 pertussis toxin with substantially reduced enzymatic  
4 activity.  
5 2. An antigenic mutant pertussis toxin having substantially  
6 reduced enzymatic activity.  
7 3. The mutant toxin of claim 2 having a single amino acid  
8 substitution comprising replacing arginine with lysine at  
9 position 9 of S1 subunit.  
10 4. A composition comprising immunogenic amount of the toxin of  
11 claim 2 in a pharmaceutically acceptable carrier.

*add 21*

*Robert*